

**NC STATE UNIVERSITY**

# NC State Undergraduate Physics



 **SPIN-UP**

**September 12, 2009**

**NC State Physics**

# The Physics Undergraduate Program is Excellent by any Measure

## 2008 Graduating Class

- Median GPA of 3.6
- 12/22 with double major
- 7 Phi Beta Kappa
- Marshall Scholar
- NSF Graduate Fellowship



Michael Paesler Brian Clarke Kasey Phillips

# Graduates are ready for the next step



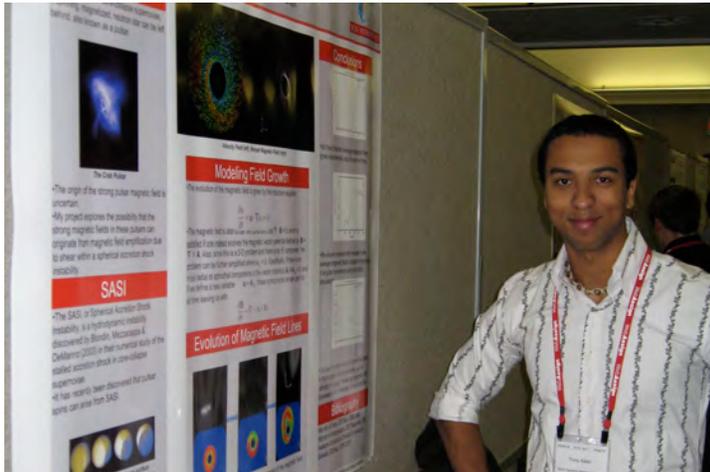
Mary Williard  
Park Scholar

- Graduate School
  - Cambridge, Ohio State, Boston College, Vanderbilt, Colorado
- Employment
  - NIST, Boeing, GE, Peace Corp, HS Teacher, Engineering Firms

# Case Study 2000

The SPIN-UP Case Study in 2001 prompted a critical self-examination of the department that brought focus to the undergraduate program.

- Understanding our role on campus (and exploiting it!)
- Maintain the rigor of 'traditional' B.S. in Physics
- Started formal exit interviews with graduating seniors
- Promote continual assessment of Undergraduate Program



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# Case Study 2000

**The department works extremely effectively to mentor undergraduate majors and *build community* within the department.**

- Majors-only freshman physics sequence.
- Events to welcome new majors, SPS activities.
- Group projects to encourage students to work together.
- Faculty advisors work closely with majors.
- SPS room and resources for worthwhile projects (pizza)
- Undergraduates are hired to work for the department.



# Case Study 2000

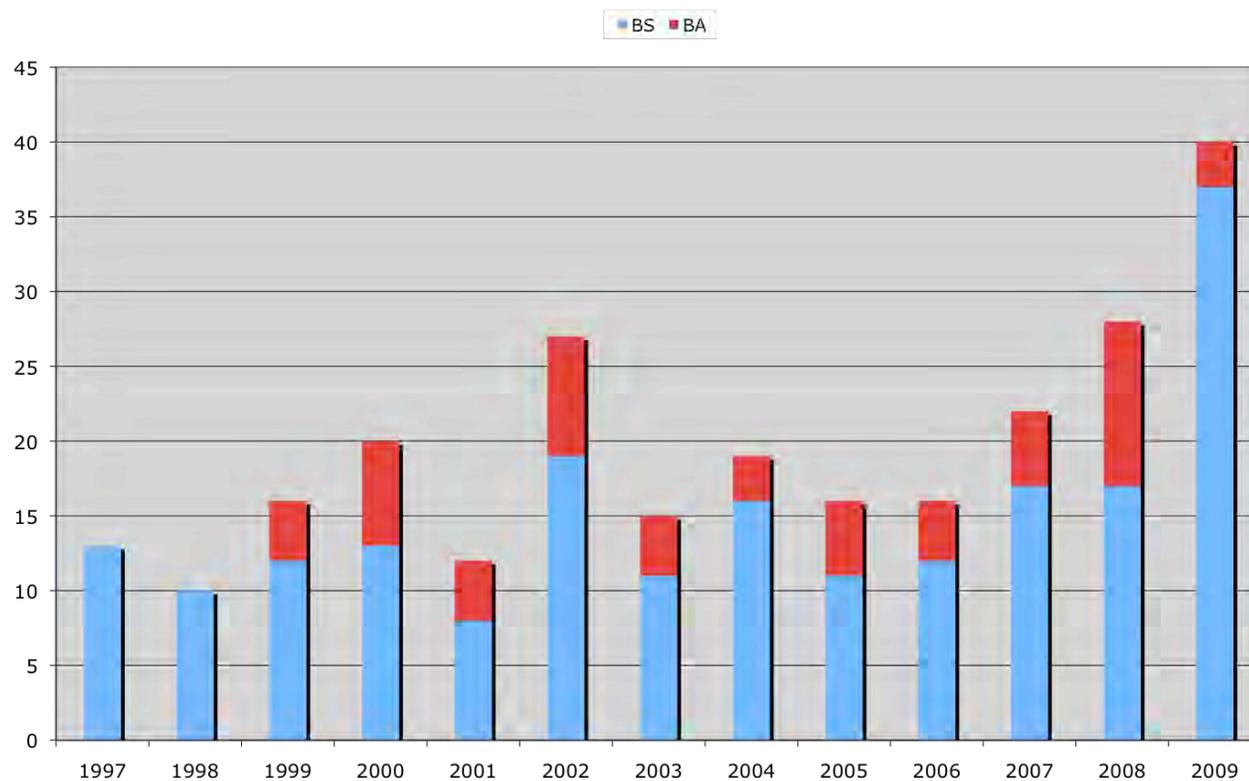
- **Undergraduate curriculum is focused on rigorous traditional physics major.**
- **All majors are encouraged to participate in research.**
- **The senior laboratory has been revised to focus on individual projects**
- **The undergraduate director works closely with College admissions**
- **Students are encouraged to carry double majors**
- **Alumni Dinner brings together current students and recent graduates.**

# Case Study 2000

- Undergraduate curriculum is focused on rigorous traditional physics major.
- All majors are encouraged to participate in research. **No open positions!**
- The senior laboratory **is still a major problem!**
- The undergraduate director **does no pro-active recruiting!**
- Students are encouraged to carry double majors
- Alumni Dinner brings together current students and recent graduates.

# Has anything changed?

Bachelor Degrees in Physics



# Why is the Physics Program a Success?



Turhan Carroll

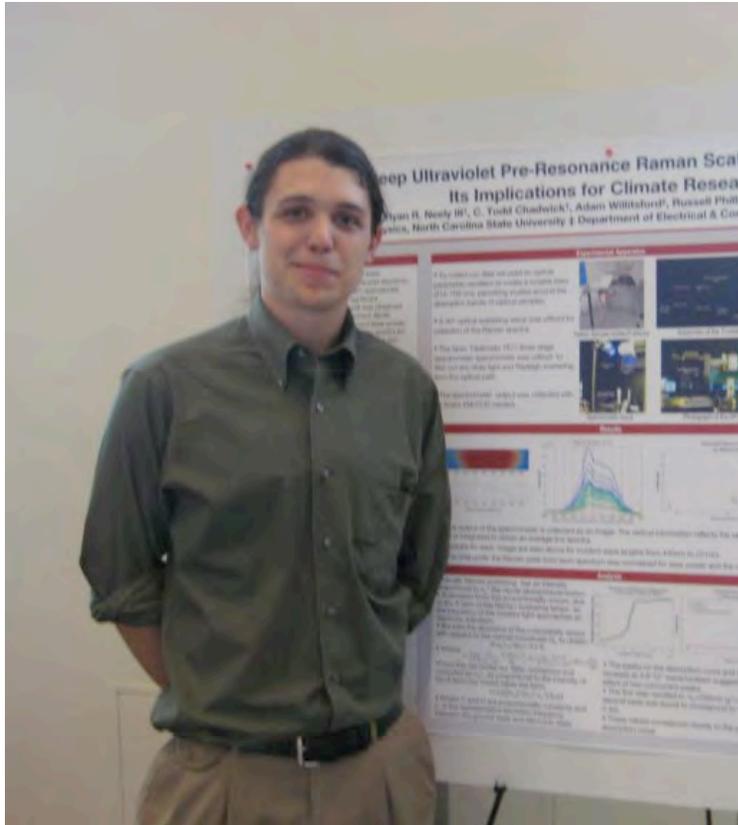
Steve Reynolds

- Quality Students
- Nurturing Environment
- Rigorous Curriculum
- Undergraduate Research
- Excellent Faculty

## Physics is highly selective\*

Freshman Class	NCSU	PAMS	Physics
Mean GPA:	4.12	4.30	4.34
Mean SATV:	570	583	593
Mean SATM:	604	635	657
Mean SAT total:	1174	1218	1250
Number of students:	4791	205	27

# Undergraduate Research



- Longest running REU
- Undergraduate Research Symposium
- McCormick Award (14 years)
- Physics UGR Colloquium
- NCSU UGR Awards
- Excellent Faculty Mentors

Ryan Neely III

**NC STATE UNIVERSITY**

# **FACULTY**



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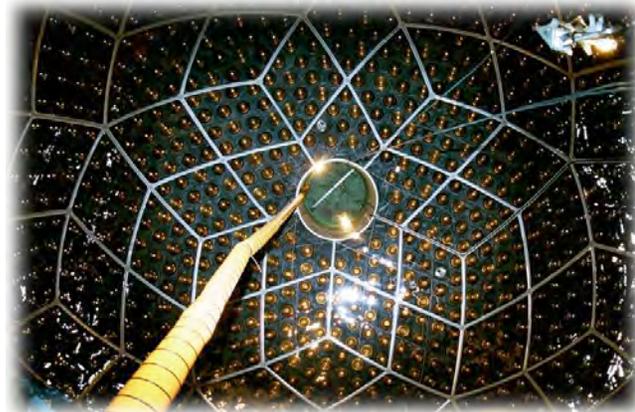
**NC State Physics**

# FACULTY

A [self-selected] subset of physics faculty...

- teach physics majors
- advise physics majors (8-10 per advisor)
- mentor undergraduate researchers

These faculty are committed to teaching *and* leading research:



## Where can we improve?

- Diversity
- Recruiting top NC high school students
- Improve retention; Smooth Junior wall
- Top seniors applying for NSF, awards
- Help students prepare for job market
  - Career Services
  - Alumni Dinner
  - Job Fair

